Abstract of the Disclosure

A catalyst comprising a complex of catalytic oxides comprising rubidium, cerium, chromium, iron, bismuth, molybdenum, and at least one of nickel or nickel and cobalt, optionally magnesium, and optionally one of phosphorus, antimony, tellurium, sodium, lithium, potassium, cesium, thallium, boron, germanium, tungsten calcium, wherein the relative ratios of these elements are represented by the following general formula:

$$Rb_a\ Ce_b\ Cr_c\ Mg_d\ A_e\ Fe_f\ Bi_g\ Y_h\ Mo_{12}\ O_x$$

wherein A is Ni or the combination of Ni and Co,

Y is at least one of P, Sb, Te, Li, Na, K, Cs, Tl, B, Ge, W,

Ca, Zn, a rare earth element, or mixtures thereof,

a is about 0.01 to about 1,

b is about 0.01 to about 3,

c is about 0.01 to about 2,

d is 0 to about 7,

e is about 0.01 to about 10,

f is about 0.01 to about 4,

g is about 0.05 to about 4,

h is 0 to about 3,

x is a number determined by the valence requirements of the other elements present,

wherein "b" + "c" is greater than "g" and wherein the catalyst is substantially free of manganese, a noble metal and vanadium. The catalyst is useful in processes for the ammoxidation of an olefin selected from the group consisting of propylene, isobutylene or mixtures thereof, to acrylonitrile, methacrylonitrile and mixtures thereof, respectively.